

**REMARKS**

Claims 1-56 are currently pending in this application. In the Office Action mailed March 31, 2006 (the "Office Action"), claims 1-14, 16, 17, 19, 23, 24, 32, 33, 35-45, 55, and 56 were rejected and claims 15, 18, 20-22, 25-31, 34, and 46-54 were objected to as being dependent on a rejected base claim. Through this amendment, claims 1, 3, 4, 5, 39, and 40 have been amended. Applicant respectfully requests favorable consideration of the present application in light of the amendments to the claims and the following remarks.

**I. Specification – 37 CFR 1.75(d)(1)**

The specification was objected to by the Office Action under 37 CFR 1.75(d)(1) for failing to provide a proper antecedent basis for the claimed subject matter. Specifically, the specification was objected to for failure to provide antecedent basis for the material of claim 44, including adjusting the position of the cross member by “rotating the cross member about a vertical axis.” Applicant respectfully traverses this objection as set forth below.

Under 37 CFR 1.75(d)(1), “the claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.” In this instance, the specification does in fact provide an antecedent basis for the phrase in claim 44: “rotating the cross member about a vertical axis.” On page 12 of the specification, lines 30-34 state: “Returning to Fig. 1, an upper portion 22 of each of supports 20 is adapted to move back and forth laterally in direction D2 (which is perpendicular to direction D1). Accordingly, separate positioning of each of supports 20 along guiderails 30 (in direction D1) is possible, permitting rotation of cross member 12 in direction R3.” Similarly, page 16 lines 14-16 state: “As such, the position of cross member 12 (not shown) spanning between supports 20 is adjusted by separately moving supports 20 in direction D1 such that a gap between vertebrae V1 and V2 is seen. (As such cross member 12 is rotated in direction R3).” Also, Figs. 1, 3, 4, 8, and 9, depict direction R3 as rotation about a vertical axis.

As described on pages 12 and 16 of the specification, and depicted in Figs. 1, 3, 4, 8, and 9, the language of claim 44 claiming “rotation about a vertical axis” has a proper antecedent basis in the specification. Thus, Applicant respectfully requests that the objection to the specification be withdrawn. The specification is believed to be in proper condition for allowance and an indication of such is hereby earnestly solicited.

## **II. Drawings – 37 CFR 1.83(a)**

The drawings were objected to by the Office Action under 37 CFR 1.83(a) as not showing every feature of the invention specified in the claims. Specifically, the drawings were objected to on page 2 of the Office Action because “the rotating the cross member about a vertical axis must be shown.” Applicant respectfully traverses this objection as set forth below.

As mentioned above, Figs. 1, 3, and 9, depict the cross member 12 as rotating around a vertical dashed line, indicating an axis, in direction R3. Figs. 4 and 8 also depict cross member 12 as rotating about a vertical axis in direction R3, but because these figures are drawn from a top view, the axis is not visible; the axis is perpendicular to the page.

As depicted in Figs. 1, 3, 4, 8, and 9, the rotation of the cross member 12 about a vertical axis is shown. Thus, Applicant respectfully requests that the objection to the drawings be withdrawn. The drawings are believed to be in proper condition for allowance and an indication of such is hereby earnestly solicited.

## **III. Claim Rejections – 35 USC § 102(b)**

### **A. Magnusson**

Claims 5-10, 12-4, 16, 24, 35-38, 40, 42, 43, 45, and 55 were rejected by the Office Action under 35 USC § 102(b) as being anticipated by U.S. Patent No. 5,280,427 to Magnusson et al (“Magnusson”). Applicant respectfully traverses this rejection as set forth below.

In order for a reference to anticipate the present claimed invention under 35 USC 102(b), it must be shown that each and every element of the claim can be found in the reference. If it can be shown that one element of the claim is missing or not met by the cited reference, the rejection must be withdrawn as inappropriate.

Claim 5, as amended, recites a surgical instrument positioning system comprising at least one support; a cross member having a central section disposed in a first plane and at least one curved end portion disposed in a second plane which is generally perpendicular to the first plane, the at least one curved end portion being held by the at least one support such that the cross member is rotatable about an axis which is laterally offset from the first plane and extending through a center of curvature of the at least one curved end portion of the cross member; and at least one surgical instrument holder suspended from the cross member.

Claim 40, as amended, recites a method of positioning a surgical instrument in a selected plane passing through a patient's body, comprising: positioning the patient under a cross member disposed in a first plane and having a surgical instrument holder suspended therefrom, the cross member having a curved end portion held by a support and is disposed in a second plane generally perpendicular to the first plane, such that the cross member is rotatable about an axis extending through the center of curvature of the curved end portion and laterally offset from the first plane, the surgical instrument holder being positioned to hold a surgical instrument in a plane in which the axis extending through the center of curvature of the curved end portion of the cross member is disposed; adjusting the position of the cross member such that the axis extending through the center of curvature of the at least one curved end portion of the cross member is disposed in the selected plane; and rotating the cross member about the axis extending through the center of curvature of the at least one curved end portion of the cross member such that the plane in which the surgical instrument is held is aligned with the selected plane.

The Magnusson reference appears to be silent with regard to at least one element found in amended claim 5 of the claimed invention. Among other voids, the Magnusson reference does not disclose the claim 5 component of "a cross member having a central section disposed in a

**first plane and at least one curved end portion disposed in a second plane which is generally perpendicular to the first plane.”**

Although Magnusson discloses a positioning system having a curved cross member, the curved end portion of the cross member does not anticipate the curved end portion of the cross member of applicant's system. As described in amended claim 5, the central section of Applicant's cross member is disposed in a first plane, which is perpendicular to the second plane of the curved end portion of the cross member. That is to say, the curved end of the Applicant's cross member is perpendicular to the central section of Applicant's cross member. Conversely, the curved end of the cross member in Magnusson is disposed in the same plane as the center section of the cross member, and is not perpendicular to that plane.

Additionally, Magnusson appears silent in regard to another element of amended claim 5 regarding the curved end of the cross member. As amended, claim 5 describes the cross member as being “rotatable about an **axis which is laterally offset from the first plane** and extending through a center of curvature of the at least one curved end portion of the cross member.” As such, the axis about which the central section of the cross member rotates is not aligned with the central section of the cross member. This creates unique surgical angles in relation to the patient upon which the device is being used. Conversely, the center of the curved ends in Magnusson are in line with the cross member, and thus rotation about the axis passing through the center of the curved ends is essentially rotation about the axis of the cross member.

Furthermore, the Magnusson reference appears to be silent with regard to at least one element found in amended claim 40 of the present invention. Among other voids, the Magnusson reference does not disclose the element of amended claim 40 whereby the method employs a “cross member **disposed in a first plane** and having a surgical instrument holder suspended therefrom, the cross member having a curved end portion held by a support **and is disposed in a second plane generally perpendicular to the first plane.”**

As discussed above, the curved end portion of the Magnusson's cross member does not anticipate the curved end portion of the cross member in Applicant's claim 40. As described in

claim 40, the central section of Applicant's cross member is disposed in a first plane, which is generally perpendicular to the plane of the curved end portion of the cross member. Conversely, the curved end of the cross member in Magnusson is disposed in the same plane as the center section of the cross member.

Additionally, Magnusson appears silent in regard to another element of amended claim 40 regarding the rotation of the cross member. As amended, claim 40 describes the cross member as being "rotatable about an axis extending through the center of curvature of the curved end portion of the cross member and **laterally offset from the first plane.**" As such, the axis about which the cross member rotates is not aligned with the cross member itself. Again, this rotation about an axis distinct from its own facilitates unique surgical angles in relation to the patient upon which the device is being used. Conversely, the axis about which the Magnusson cross member rotates is in line with the cross member, and thus rotation about the axis passing through the center of the curved ends is essentially rotation about the axis of the cross member.

Because the Magnusson reference is silent with respect to at least one element of amended claims 5 and 40, it is respectfully requested that the rejection of claims 5 and 40 in the Office Action be withdrawn. Claims 5 and 40 are believed to be in proper condition for allowance and an indication of such is hereby earnestly solicited.

Claims 6-10, 12-14, 16, 24, 35-38, being dependent upon and further limiting independent claim 5, should be deemed allowable for the reasons set forth in support of the allowability of claim 5, as well as the additional features they contain. Claims 42-45 and 55, being dependent upon and further limiting independent claim 40, should be deemed allowable for the reasons set forth in support of the allowability of claim 40, as well as the additional features they contain.

**B. Nymark**

Claims 1-9, 11, 17, 19, 23, 32, 33, 35-43, 45, 55, and 56 were also rejected by the Office Action under 35 USC § 102(b), as being anticipated by U.S. Patent No. 5,147,372 to Nymark, et al ("Nymark"). Applicant respectfully traverses this rejection as set forth below.

Claim 1, as amended, recites a surgical instrument positioning system comprising a pair of supports; a cross member having opposing first and second curved ends and a curved center section extending between the supports, the curved center section disposed within a first plane, the first curved end disposed within a second plane and the second curved end disposed within a third plane; and at least one surgical instrument holder suspended from the cross member; wherein the second and third planes are each perpendicular to the first plane and the first and second curved ends each curve about an axis laterally offset from the first plane.

Claim 39, as amended, recites a method of positioning a surgical instrument in a selected plane passing through a patient's body comprising: positioning a patient under a cross member having a curved central section which spans between two supports on either side of the patient and is disposed in a first plane, the cross member having opposite curved ends which are disposed in second planes which are perpendicular to the first plane, the ends being curved about an axis which is laterally offset from the first plane, and the opposite curved ends each being supported by one of the supports; adjusting the position of the cross member such that an axis passing through the centers of curvature of the opposite ends of the cross member also passes through a surgical target region on the selected plane; adjusting the position of the cross member such that a plane disposed parallel to the curved center section of the cross member is disposed in the selected plane; and adjusting the position of a surgical instrument holder suspended from the cross member such that a surgical instrument suspended in the surgical instrument holder is positioned at a preferred angle in the selected plane.

The Nymark reference appears to be silent with regard to at least one element found in amended claim 1 of the claimed invention. Among other voids, the Nymark reference does not disclose the claim 1 component of a cross member having a curved central section that **"disposed within a first plane, the first curved end disposed within a second plane and the**

**second curved end disposed within a third plane; and at least one surgical instrument holder suspended from the cross member; wherein the second and third planes are each perpendicular to the first plane.”**

Although Nymark discloses a positioning system having a curved cross member, the curved end portions of the cross member do not anticipate the curved end portions of the cross member of applicant's claim 1. As described in claim 1, the central section of Applicant's cross member is disposed in a first plane, which is perpendicular to the second and third planes of the curved end portions of the cross member. That is to say, the curved ends of the Applicant's cross member are parallel to one another and perpendicular to the central section of Applicant's cross member. Conversely, the curved ends of the cross member in Nymark are disposed in the same plane as the center section of the cross member, and is not perpendicular to that plane.

Additionally, Nymark appears silent in regard to another element of amended claim 1 regarding the curved ends of the cross member. As amended, claim 1 describes the curved ends as being **“curve[d] about an axis laterally offset from the first plane.”** As such, the axis of rotation is not aligned with the central section of the cross member. Conversely, the center of the curved ends in Nymark are in line with the cross member, and thus rotation about the axis passing through the center of the curved ends is essentially circular rotation about the axis of the cross member.

Furthermore, the Nymark reference appears to be silent with regard to at least one element found in amended claim 5 of the present invention. Among other voids, the Magnusson reference does not disclose the element of amended claim 5 whereby the system employs “a cross member having a central section disposed in a **first plane** and at least one curved end portion disposed in a **second plane which is generally perpendicular to the first plane**, the at least one curved end portion being held by the at least one support such that the cross member is **rotatable about an axis which is laterally offset from the first plane** and extending through a center of curvature of the at least one curved end portion of the cross member.”

Similar to the point regarding Magnusson, the curved end portion of the cross member in Nymark does not anticipate the curved end portion of the cross member of applicant's amended claim 5. As described in amended claim 5, the central section of Applicant's cross member is disposed in a first plane, which is perpendicular to the second plane of the curved end portion of the cross member. Thus the curved end of Applicant's cross member is perpendicular to the central section of Applicant's cross member. Conversely, the curved ends of the cross member in Nymark are disposed in the same plane as the center section of the cross member, and are not perpendicular to that plane.

Additionally, according to amended claim 5 the axis of the cross member's rotation is not aligned with the central section of the cross member. As the cross member rotates about an axis passing through the center of the curvature of the curved end, the offset nature of the curved end allows the cross member to rotate about an axis distinct from its own - thus creating unique angles in relation to the patient upon which the device is being used. Conversely, the center of the curved ends in Nymark are in line with the cross member, and thus rotation about the axis passing through the center of the curved ends is essentially rotation about the axis of the cross member.

Amended method claim 39 is substantially similar to amended claim 1 on these points, reading "having a curved central section which spans between two supports on either side of the patient and is disposed in a **first plane**, the cross member having opposite curved ends which are **disposed in second planes which are perpendicular to the first plane, the ends being curved about an axis which is laterally offset from the first plane.**" Thus, Nymark does not anticipate Applicant's amended claim 39 for the same reasons it does not anticipate Applicant's amended claim 1.

Amended method claim 40 is substantially similar to amended claim 5 on these points, reading: "a cross member **disposed in a first plane** and having a surgical instrument holder suspended therefrom, the cross member having a curved end portion held by a support **and is disposed in a second plane generally perpendicular to the first plane**, such that the cross



member is rotatable about an axis extending through the center of curvature of the curved end portion **and laterally offset from the first plane.**” Thus, Nymark does not anticipate Applicant’s amended claim 40 for the same reasons it does not anticipate Applicant’s amended claim 5.

Claims 2-4, being dependent upon and further limiting independent claim 1, should be deemed allowable for the reasons set forth in support of the allowability of claim 1, as well as the additional features they contain. Claims 6-9, 11, 17, 19, 23, 32, and 35-38, being dependent upon and further limiting independent claim 5, should be deemed allowable for the reasons set forth in support of the allowability of claim 5, as well as the additional features they contain. Claims 41-43, 45, 55 and 56, being dependent upon and further limiting independent claim 40, should be deemed allowable for the reasons set forth in support of the allowability of claim 40, as well as the additional features they contain.

#### **IV. Claim Rejections – 35 USC § 103(a)**

Claim 46 was rejected under 35 USC § 103(a) as being unpatentable over Ray or Nymark in view of U.S. Patent No. 4,750,487 to Zanetti (“Zanetti”). Applicant respectfully traverses this rejection as set forth below.

To establish a *prima facie* case of obviousness under 35 USC § 103(a) in view of a reference or combination of references, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the prior art reference(s) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. Finally, in determining the differences between the prior art and the claims, the question

under 35 USC § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious.

Claims 46 depends from and further limits independent claim 40. As presented earlier, neither Magnusson nor Nymark anticipate Applicant's amended claim 40. Similarly, there is nothing in Zanetti to suggest to one skilled in the art the invention of a surgical positioning system employing a cross member having curved ends disposed in a plane perpendicular to the central section of the cross member. Additionally, there is nothing in Zanetti to suggest that the cross member rotate about an axis extending through the center of the curved end portion and laterally offset from the plane of the central section. As such, Applicant respectfully submits that there is no reason why one skilled in the art would be led to the present invention as claimed based on the prior art disclosed in Magnusson or Nymark in conjunction with Zanetti.

Claim 46 is dependent upon independent amended claim 5 and must therefore be read in conjunction with claim 5 to determine the obviousness of the invention as a whole. Since amended claim 5 is neither anticipated by, nor obvious under Magnusson or Zymark in conjunction with Zanetti, claim 46 should not be rendered obvious under the aforementioned references. Applicant therefore respectfully requests a withdrawal of a finding of obviousness under 35 USC § 103 with respect to these claims. Claim 46 is believed to be in proper condition for allowance and an indication of such is hereby respectfully requested.

#### **V. Allowable Subject Matter**

Claims 15, 18, 20-22, 25-31, 34, 46-54 were objected to as being dependent upon rejected base claims, but would be allowable if rewritten in an independent form. Applicant wishes to thank the Examiner for this indication of allowability regarding Claims 15, 18, 20-22, 25-31, 34, 46-54. While no amendments have been made at this time (based on applicant's belief in the allowability of amended claims 5 and 40 from which claims 15, 18, 20-22, 25-31, 34, 46-54 depend), applicant reserves the right to amend claims 15, 18, 20-22, 25-31, 34, 46-54 per the Examiner's indication of allowability at a later date.

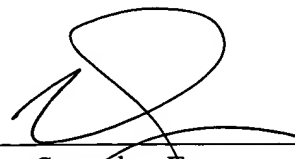


**Responsive Amendment**  
Application Serial No. 09/888,223  
Attorney Ref. No. 048US1

**CONCLUSION**

The foregoing amendment has been submitted to place the present application in condition for allowance. Favorable reconsideration and allowance of the claims in this application is respectfully requested. In the event that there are any questions concerning this Amendment or the application in general, the Examiner is cordially invited to telephone the undersigned attorney so that prosecution may be expedited.

Respectfully submitted,  
NUVASIVE, INC.

By:   
Jonathan Spangler, Esq.  
Registration No. 40,182

4545 Towne Centre Court  
San Diego, CA 92121  
Tel.: (858) 909-1853

Date: July 26, 2006